Mirfat Munir Al-geelani
Group (A) - (8)
3rd year

"Clinical Lab."

"practical guide"

18th Feb. 2015
Wednesday.

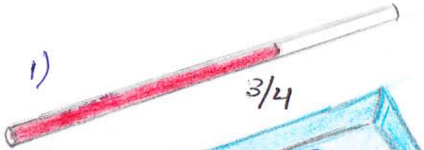
Lab (1)

Heamatocrit (PCV) & Hb

[1] Estimation of PCV by Microhaematocrit method. Normal → 40 - 52 % M
36 - 48 % F

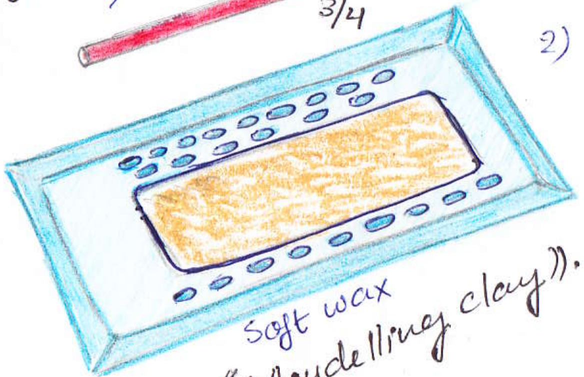
(*) Requirements :- (1) Blood specimen (2) Cappillary Heamatocrit tube
(3) Soft wax (4) Heamatocrit centrifuge
(5) Heamatocrit reader.

(*) Steps :-

1) 

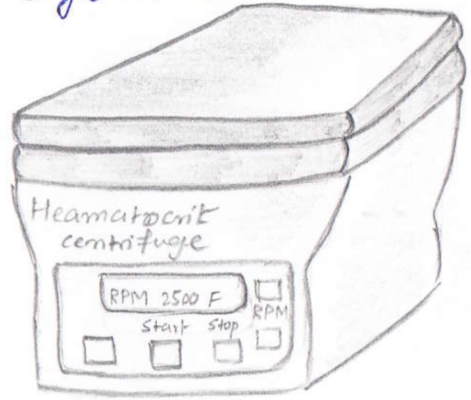
1) draw the specimen in the cappillary tube about 3/4 length.

2) Seal both ends of the tube with Soft wax.

2) 

Soft wax
((Moudelling clay)).

3) place the tube with another similar tube either empty or with other specimen in order to balance just opposite to each other in the centrifuge.

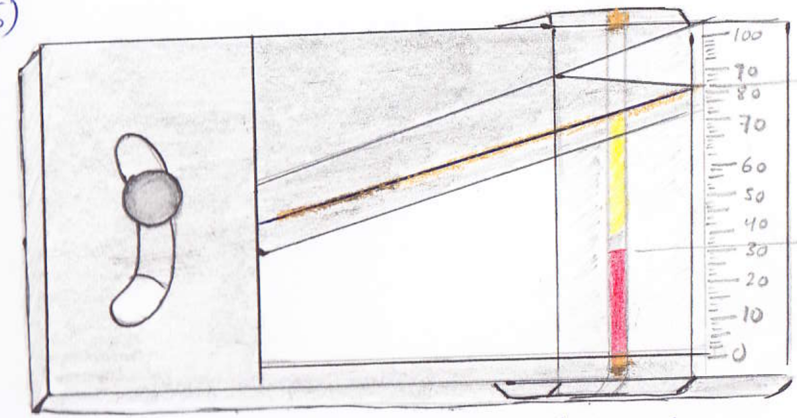


3).

4) After centrifugation the Cappillary tube consist of 3 distinct layers. →



4)

5) 

Heamatocrit reading device

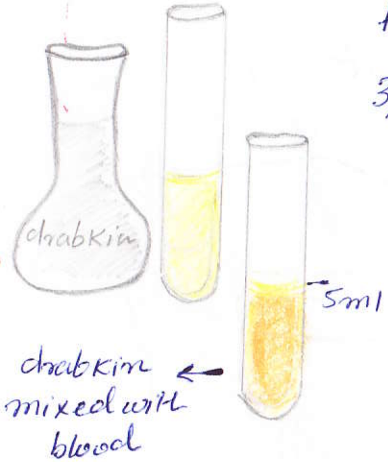
5) place the tube across the heamatocrit reading scale & indicate the heamatocrit value.

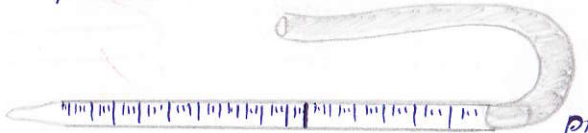
② Cyanomethemoglobin method of Hb estimation :-

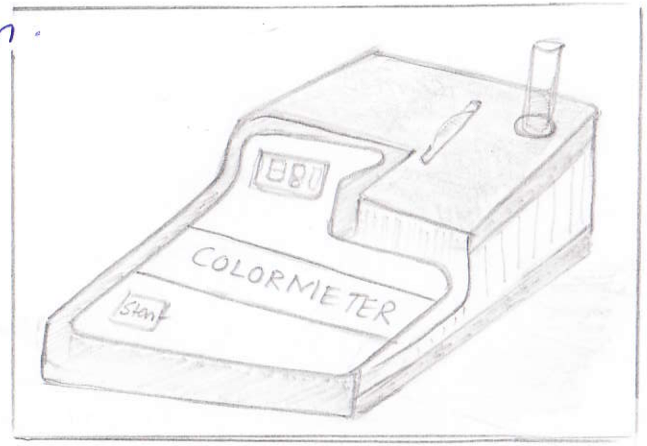
⊛ Requirements :- 1) Specimen of Blood in EDTA 2) Hb Sahli pipette 3) test tubes 4) Cuvettes 5) Spectrophotometre.

⊛ Steps :-

1) Turn the photometer On 5-10 min.
2) Transfer Drabkin Solution into test tubes. (5ml)
3) Using pipette add 0.2 μl blood to the tube & rest it for 3 min.







4) Read the (absorbance) of the sample in Spectrophotometre at 540nm.
5) Calculate Hb concentration :-

$$Hb\ (g/dl) = \frac{\text{Absorbance of Test Sample}}{\text{Absorbance of Standard}} \times \text{Concentration of Standard} \times \frac{\text{dilution}}{1000}$$

25th Feb. 2015

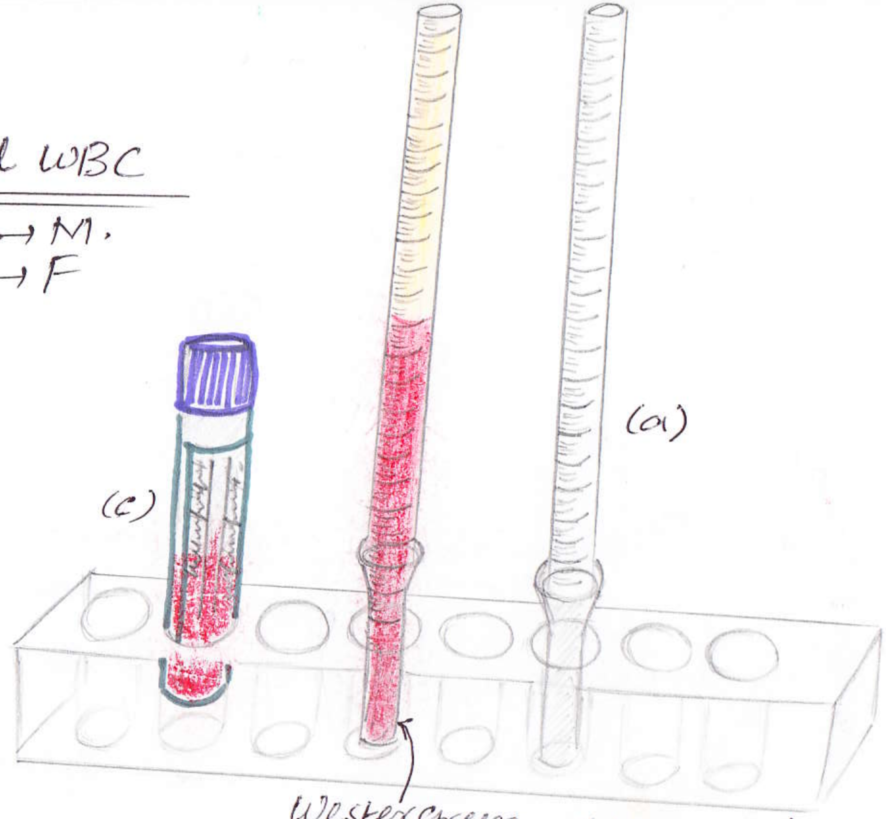
Wednesday.

Lab (2)

"ESR" estimation & Total WBC

(*) **ESR Estimation:-** Normal :- 0-15 → mm/hr → M.
0-20 mm/hr → F

(*) **Equipments:-** a) Westergreen tube.
b) Westergreen rack.
c) Anticoagulant (EDTA) ((Reagent))
or 3.8 % Sodium Citrate.



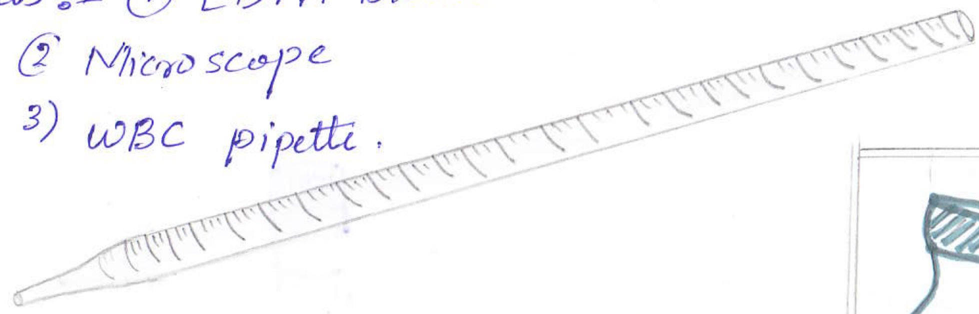
(*) **procedure:-**

1) Venous blood is anticoagulated with EDTA.
2) dilute the blood accurately in proportion of 1 vol. of citrate & 4 vol. of blood.
3) Mix well, then draw up in westergreen tube up to 200 mm by mechanical device. ((automatic pippete))
4) put the tube in upright position in special rack, after 1 hour read the height of clear plasma above the upper limit of column (Read from top downward).

P.T.O →

⊛ Method of WBC Estimation :-

⊛ Requirements :- ① EDTA Blood
② Microscope
3) WBC pipette.

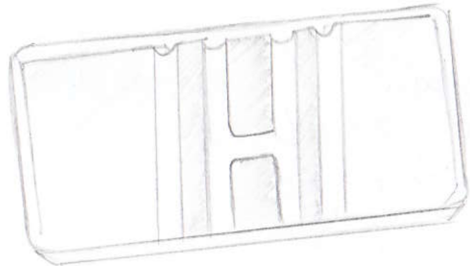


4) Turk's Solution (Glacial acetic acid)
(1% Gentian violet)
(D.W).

5) pasteur pippete.



6) Haemocytometer (Improved Neubauer chamber).



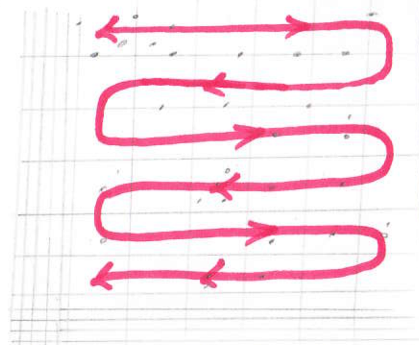
7) Cuvettes.





Use x10 obj lens
then x40 "

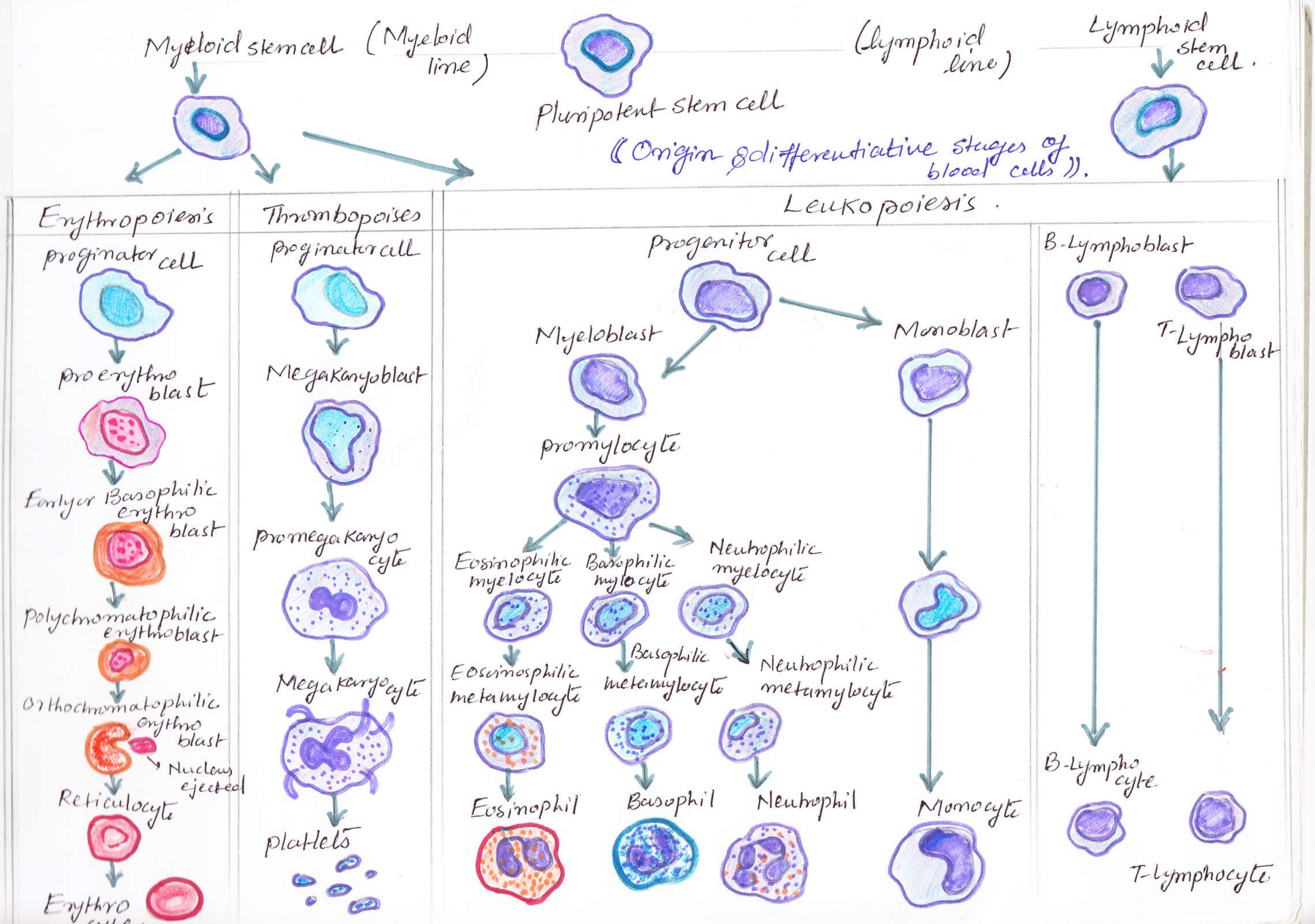
(under microscope)



(Count WBC in this manner)

⊛ procedures :-

1) Prepare Turk's solution of acetic acid + D.W + Gentian Violet.
2) Suck 0.38ml Turk's solution using WBC pipette.
3) fill it in the cuvettes & add 0.2 ml blood to it & mix it well.
4) Using paster pippete, take some drops of mixture from cuvette & place it in the Neubauer Chamber
5) See under microscope.



Myeloid stem cell (Myeloid line)
Pluripotent stem cell
(lymphoid line)
Lymphoid stem cell.
((Origin & differentiative stages of blood cells)).
Erythropoiesis
proginator cell
pro erythro blast
Earlyer Basophilic erythro blast
Polychromatophilic erythroblast
Orthochromatophilic erythro blast
Nucleus ejected
Reticulocyte
Erythro cyte.
Thrombopoises
proginator cell
Megakaryoblast
promegakaryo cyte
Megakaryocyte
platlets
Leukopoiesis.
Progenitor cell
Myeloblast
promylocyte
Eosinophilic myelocyte
Basophilic mylocyte
Neutrophilic myelocyte
Eosinosphilic metamyloacyte
Basophilic metamylocyte
Neutrophilic metamylocyte
Eosinophil
Basophil
Neutrophil
Monoblast
Monocyte
B-Lymphoblast
T-Lympho blast
B-Lympho cyte
T-Lymphocyte

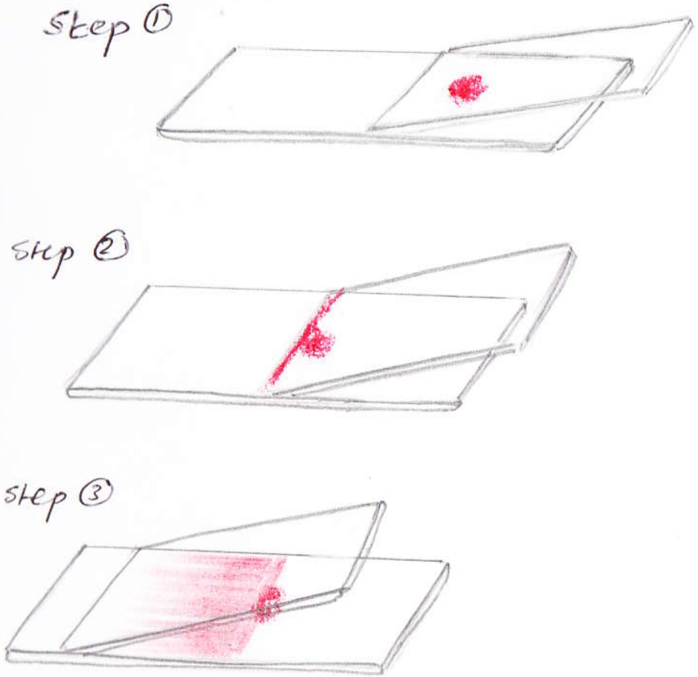
Lab ③

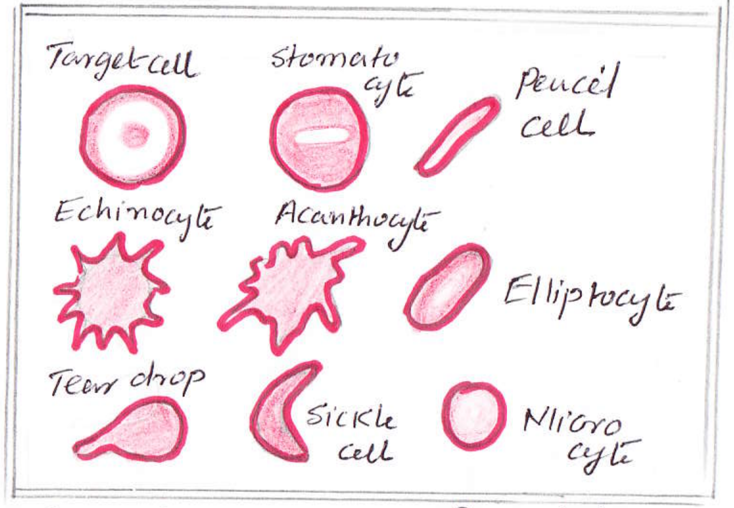
Wednesday.

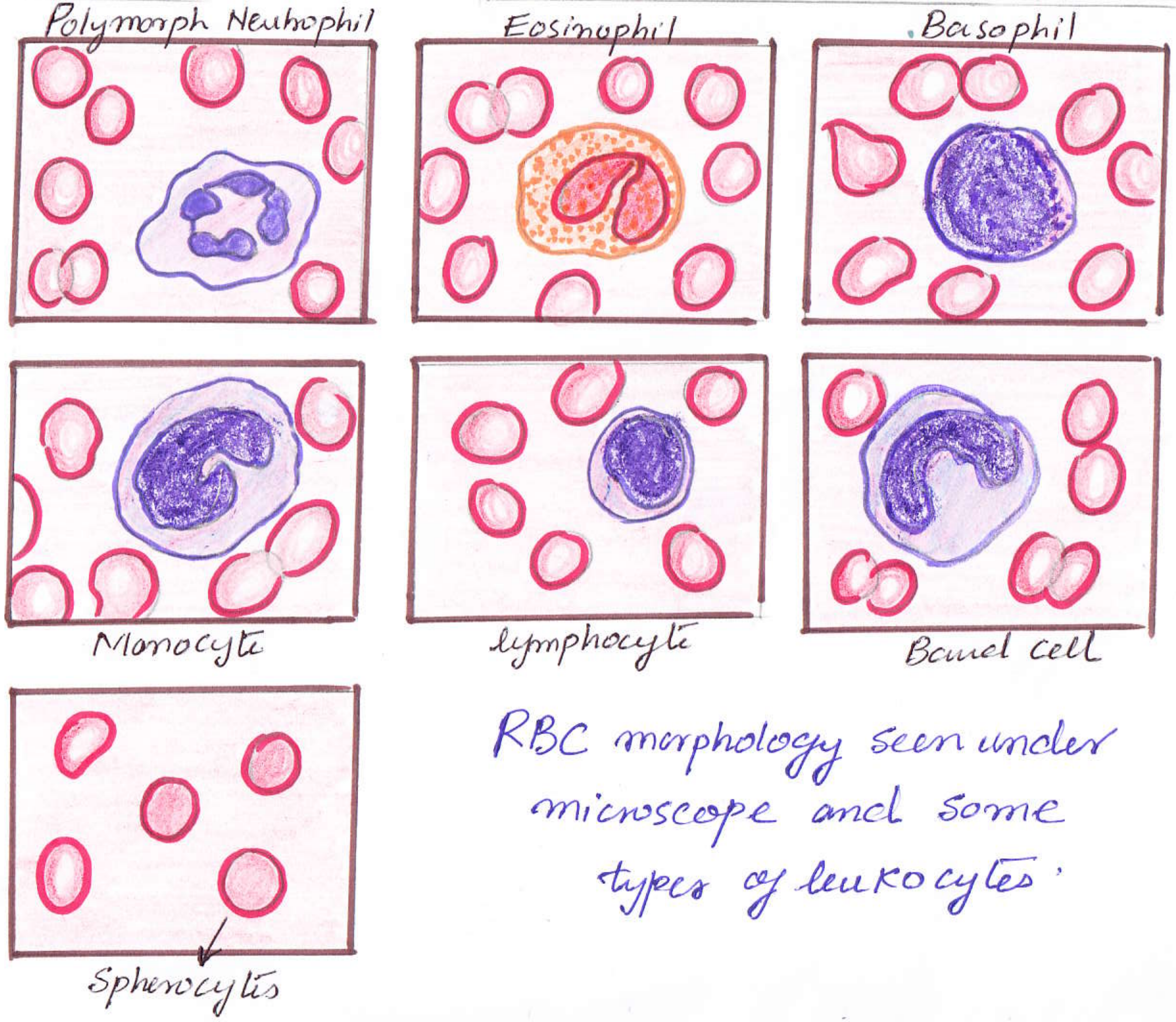
Blood film (Blood Smear)

* **Preparation of Blood Smear:-**

By following the procedures written in the hand out we prepare a blood smear by using clean greese free slide. & then see under microscope.

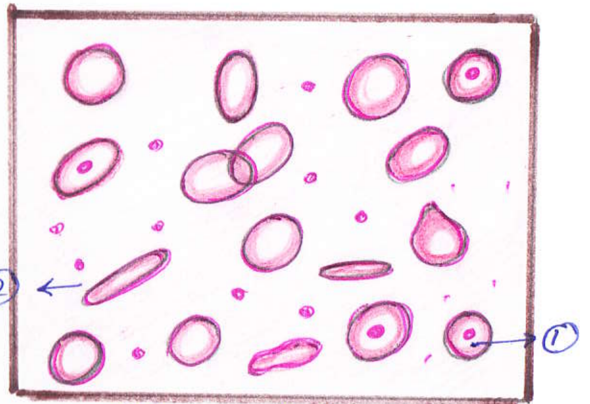






RBC morphology seen under microscope and some types of leukocytes.

Anaemias



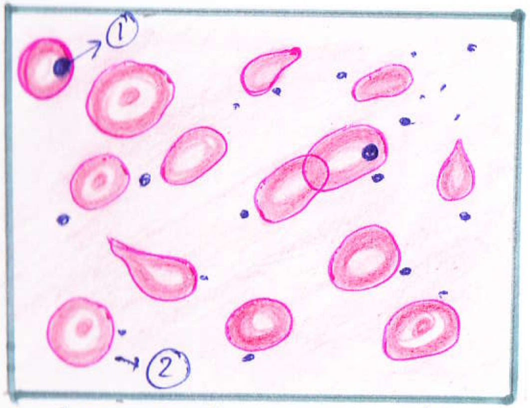
("Iron defeciency anaemia")
① Target cells
② Pencil shaped cells.



("Megaloblast Aneamea")
① with multilobulated hypersegmented neutrophil
② Oval macrocytes.



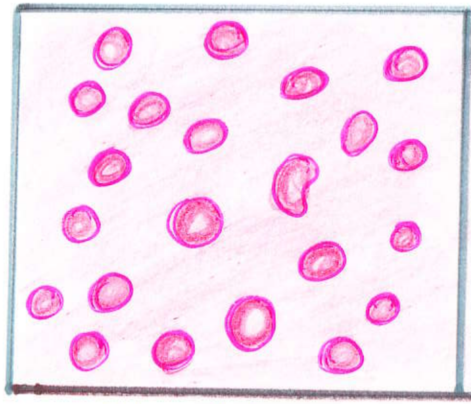
("G-6-pd defeciency") Hemolytic Aneamea.
① Bite & Blister cells.
② Heinz bodies.



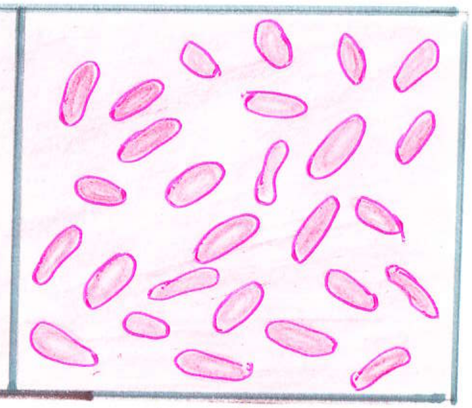
("β-thalasemia.") with ① Howell-jolley bodies.
② Target cells & poikilocytes.



("Sickle cell Aneamea")
① Sickled Red cells.



Heredetory Sphurocytosis

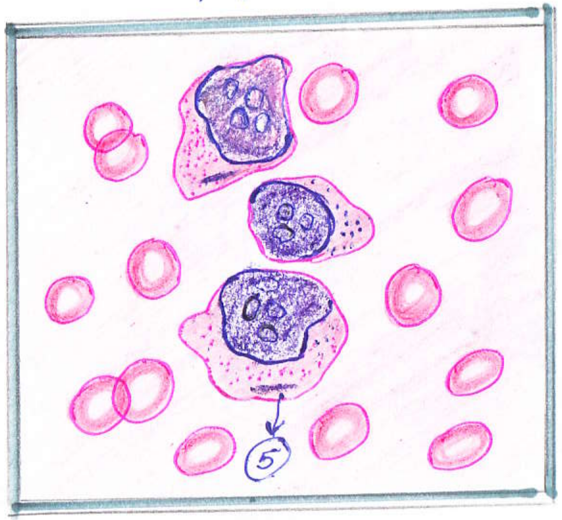


Heredetory Elliptocytoses.

Leukemias

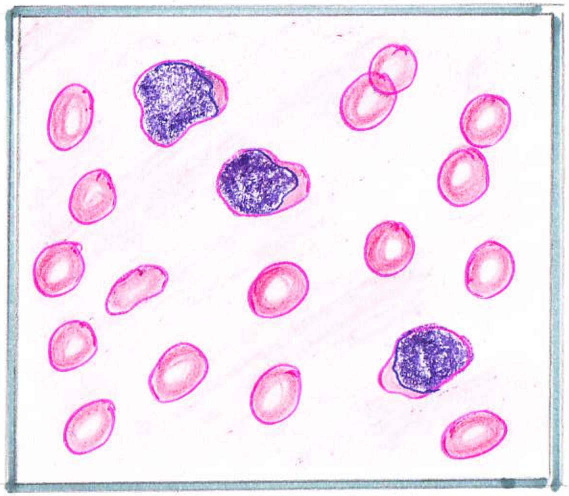
"Differentiation between AML & ALL"

AML



1. Big Blasts.
2. Lots of cytoplasm
3. Lots of nucleoli (3-5)
4. Lots of granules.
5. Aur Rods.

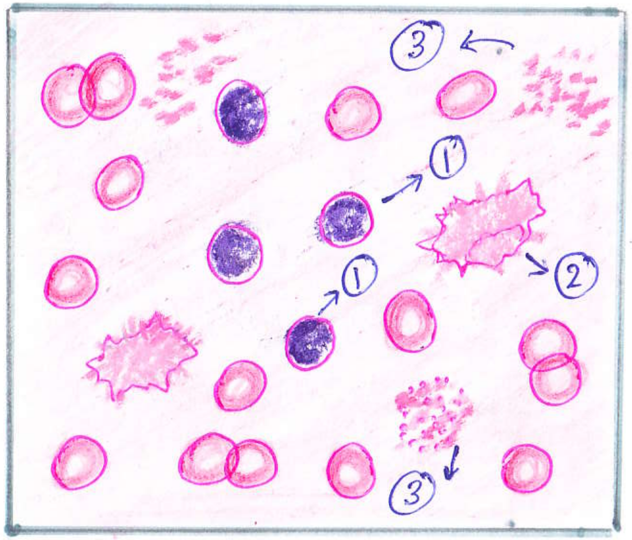
ALL



1. Small Blast
2. little cytoplasm.
3. Few neucleoli
4. No granules
5. No Aur Rods.

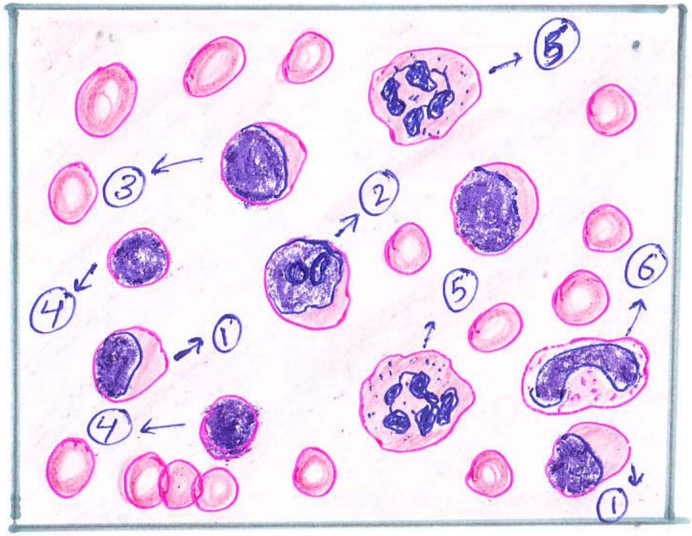
"Differentiation between CLL & CML"

CLL



1. Mature lymphocytes & lymphoblasts.
2. Smudge cells.
3. platlets aggregations.

CML

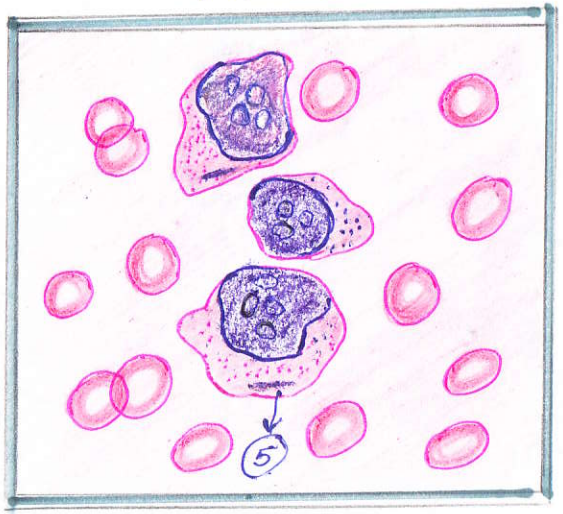


1. Predominant cells (myelocytes)
2. Promyelocyte.
3. Metamylocyte.
4. Myeloblast
5. Neutrophils.
6. Neutrophilic (Band cell).

Leukemias

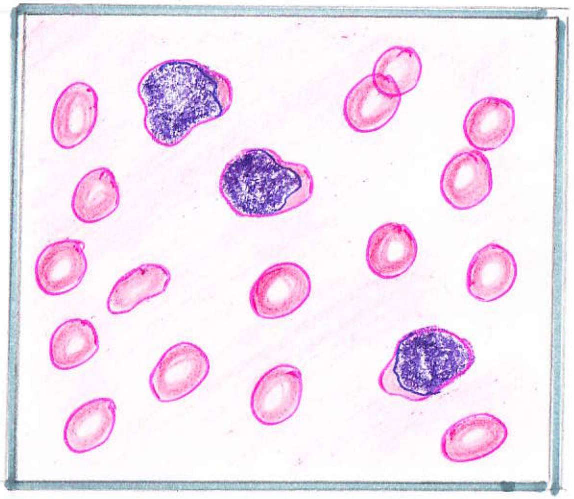
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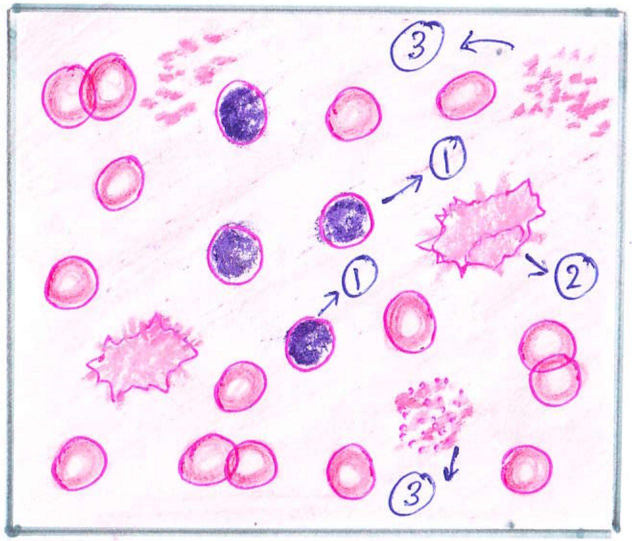
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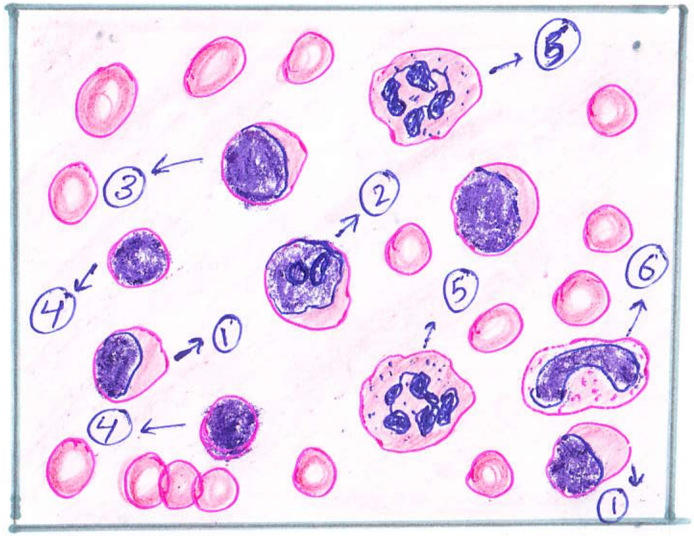
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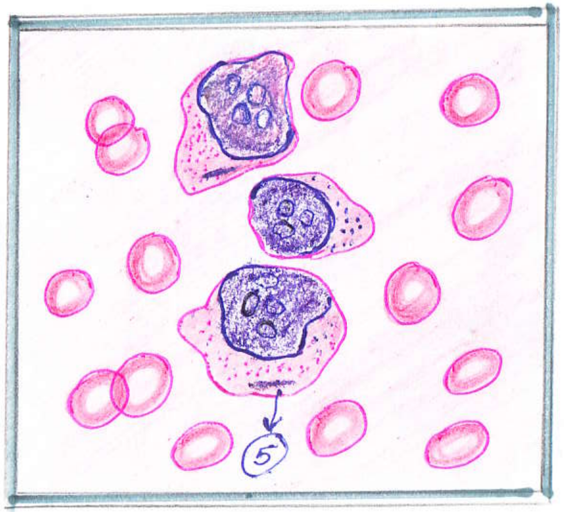


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⑥ Neutrophilic (Band cell).

Leukemias

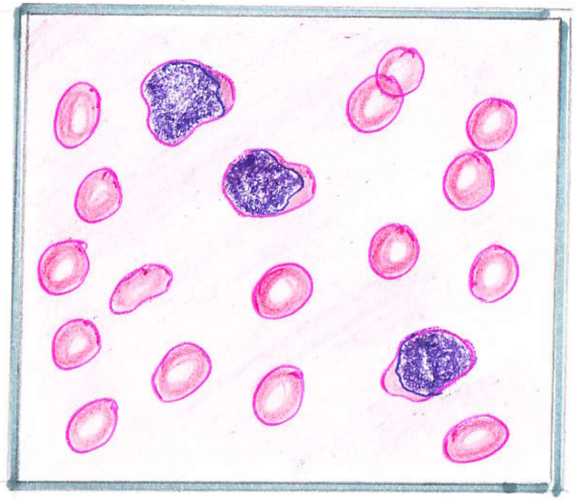
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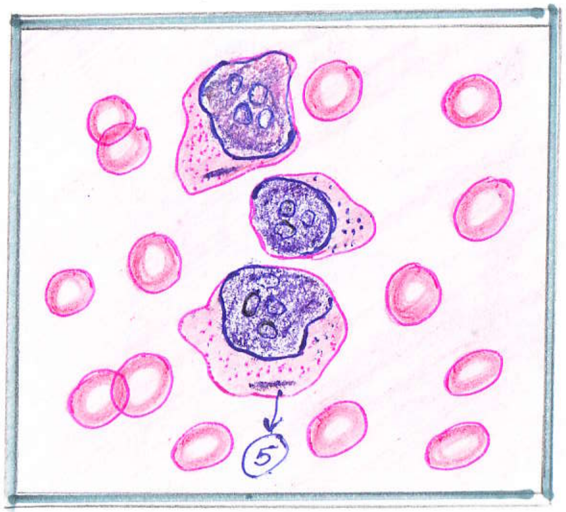


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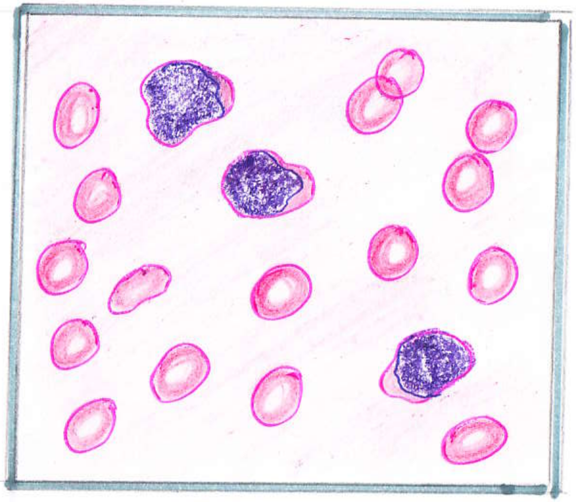
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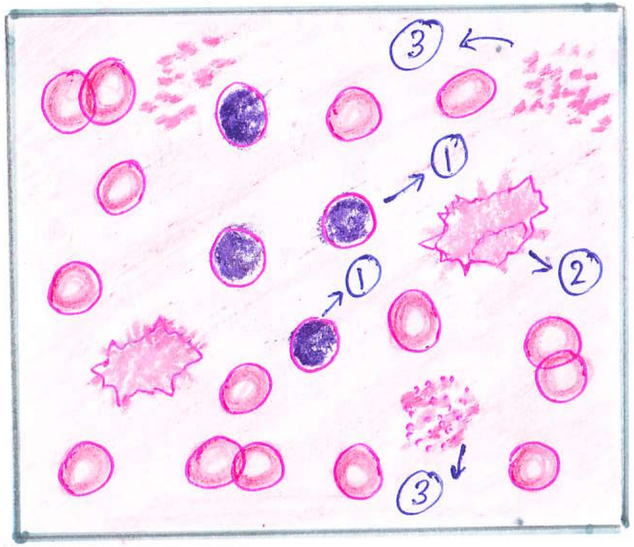
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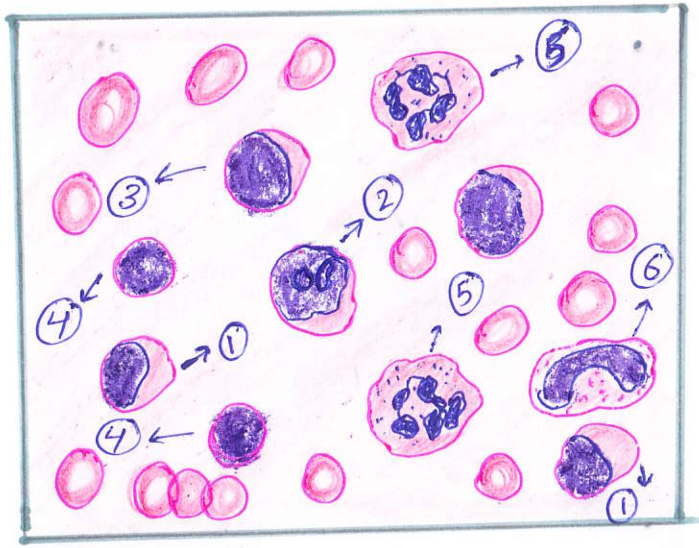
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2. promyelocyte.
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5. Neutrophils.
6. Neutrophilic (Band cell).

ALL → ∅ CLL

ALL → Smaller lymphocytes than CLL

(ALL) ← شكل الخلايا في الشريحة كأنها مكسرة .

(CLL) ← واضحة جداً الـRBC

(CLL) → Smudge

AML → all same size with nucleoli prominent ∅ aurrods.

CML → all the cells with diff. sizes.